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POWER DOOR LATCH ASSEMBLY

Field of Invention

This present invention relates to a latch assembly for latching and unlatching a member to and from a pillar. In particular, the present invention relates to a power door latch assembly for securing and unsecuring a vehicle door.

Background of the Invention

A typical motor vehicle door is mounted in a door frame on the vehicle and is movable between open and closed positions. Usually the door is held in a closed position by the latching engagement between a spring-biased ratchet pivotally mounted inside the door latch and a U-shaped striker secured to the door frame. The ratchet is most often spring-biased toward the unlatched position to release the striker and is maintained in the latched position to hold the striker by a spring-biased pawl or other mechanical structure. The ratchet cannot pivot to release the striker until the pawl is moved.

The majority of these door latches are exclusively manually operated both to unlatch the door and to relatch the door. Typically, manual release handles are provided on the inside and outside of the door to release the ratchet from the striker by moving the pawl so that the door can be opened. The door is closed and relatched by manually pivoting the door so that the ratchet impacts the striker with sufficient force to pivot the ratchet to the latched position against the spring force exerted by the ratchet spring.

It is often difficult, however, to completely close and latch manually latching vehicle doors on current model vehicles because the desire to reduce vehicle weight and to improve fuel economy has led engineers to design vehicles with relatively thin and lightweight doors. Often relatively hard door seals are used with these thin, lightweight doors to improve sealing around the door, particularly at high driving speeds. Because many vehicle doors are relatively lightweight and have relatively hard door seals, many vehicle doors often have insufficient inertial energy when pushed closed to compress these hard door seals and fully pivot the ratchet to the latched position to latch the door.

Power assisted door latch assemblies have been developed to overcome the problems associated with latching doors with lightweight construction and hard door seals. Power assisted door latch assemblies allow low inertial energy or "soft" closure of the lightweight doors without the need to slam the door even with the increased seal pressure that results from relatively hard door seals. Existing power assisted door latch assemblies typically function to latch a vehicle door in one of two ways: 1) by forcing the ratchet to pivot in the closing direction after engagement with the striker or 2) by forcing the striker to move in a door-closing direction after the striker is fully engaged with the ratchet.

Use of either type of power assisted door latch assembly decreases the noise associated with door closing and decreases the manual effort needed to completely close the door. Power assisted door latch assemblies are disclosed by Ishikawa (US 4,986,579), Kobayashi (US

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